ARI Research Note 87-01

AD-A178 379

DECREASING DAMAGING EFFECTS OF STRESS-BOUND SITUATIONS: TOWARDS A NEW MODEL OF LEADERSHIP UNDER STRESS

Orlindo Pereira and Jorge Jesuino
Universade Nova de Lisboa

for

Contracting Officer's Representative
Michael Kaplan

BASIC RESEARCH LABORATORY
Milton R. Katz, Director

U. S. Army

Research Institute for the Behavioral and Social Sciences

January 1987

Approved for public release; distribution unlimited.

U. S. ARMY RESEARCH INSTITUTE
FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the

Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

WM. DARRYL HENDERSON
COL, IN
Commanding

Research accomplished under contract
for the Department of the Army

Universade Nova de Lisboa

Technical review by

Steve Kronheim

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: ARI Research Note 87-01	2. GOVT ACCESSION NO.: AD-A178379
	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): Decreasing Damaging Effects of Stress-Bound Situations: Towards a New Model of Leadership Under Stress	5. TYPE OF REPORT & PERIOD COVERED: Interim Report November 85 - October 86
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Orlindo Pereira and Jorge Jesuino	8. CONTRACT OR GRANT NUMBER(s): DAJA 45-85-C-0036
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Universidade Nova de Lisboa	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 2Q161102B74F
11. CONTROLLING OFFICE NAME AND ADDRESS: U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600	12. REPORT DATE: January 1987
	13. NUMBER OF PAGES: 73
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): - -	15. SECURITY CLASS. (of this report): Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE: - -

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

- -

18. SUPPLEMENTARY NOTES

Michael Kaplan, Contracting Officer's Representative

fr. back Stress (Psychology),

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Stress (Physiology), Strain
~~Leadership Style~~ Stressor
Organizational Behavior,

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

In jobs or tasks where no possibility exists to avoid stress (e.g. combat action) repeated exposure is likely to produce relatively permanent damage in groups or individuals. Previous research by Pereira (1964-1981) demonstrated this fact in the case of marines involved in counter-guerrilla activity. Pereira and Jesuino (1982), using Fiedler's model as a framework, have shown that appropriate leadership can buffer the consequences of stress. To understand how such an effect comes about, the authors developed and began testing on

(over)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

ARI RESEARCH NOTE 87-01

20. Abstract (continued)

a model of leadership-group transactions. The results of this field study show that leadership has a significant bearing on the stressors-strain interface. Bureaucratic expertise is a prerequisite for leader and subordinates' acceptance of one another. Continuation of the research, and some practical applications of the finding are discussed. Keywords:

FLD19

TABLE OF CONTENTS

LIST OF APPENDIXES, ILLUSTRATIONS AND TABLES

INTRODUCTION

The concept of stress, fourty years after Selye borrowed it from Physics into Medicine, and after more than 200.000 books and papers have been published, became to be used in diferent ways. S. Kasl (1) points out four basic meanings. It may refer to an environmental condition, e.g. a stressful situation, the appraisal of such a situation, the response to it, or even the relationship between the environment demands and the ability to meet them. The original definition was clearly refered to only one the above instances. As re-stated recently by Selye, (2) stress is a nonspecific response of the body to any demand (his italics).

As a general adaptation syndrome it may leave no trace in the organism but it may also end with its death. In between these extremes a series of anatomical, physiological and psychological disturbances may occur, and repetion and comulation of effects may induce acute chronic diseases.

In jobs or tasks where there is no possibility to avoid intense and repeated demand on the organism, specialy "when there is threat or anticipation of future harm" (3), e.g. combat action, fire fighting, etc. there is empirical evidence that such repetition of stress reactions is likely to produce more or less permanent damage in individuals and in groups.

In such working situation the need to establish appropriate programs of prevention, led to the study of the individual and group coping with stress, and some investigations came to emphasize the role of leaders in facilitating such coping (4). A review of the literature (5) does not provide a conclusive answer if leadership styles, or leader follower transactions may buffer the effects of stress.

The present study constitutes a new attempt to assess the leadership effects on stress factors. Before turning to the details it seems appropriate to review some of its antecedents.

Counter-guerrilla stress

Twelve years after the termination of portuguese counter--guerrilla effort in Guinea-Bissau, Angola and Mozambique, (1961-1974) we are in a position to evaluate the long term psychological disabilities induced by the participation in the war activities. Statistical data as well as the data directly collected at the military hospitals psychiatric clinics show that after 1981 the number of new claims directly related to the participation in the war became meaningless.

If we concentrate our attention on the Navy, we find out that it were the marines that by far suffered the most with the war effort provided they have served more than one normal period (18 to 24 months) of overseas commission. Some marines were "coerced" to serve up to five such periods. The Portuguese Government claimed, at the time, that career personnel were voluntary for repeated duty periods. In fact, many conscripts were not allowed to retire or resign from the Armed Forces, except for severe health reasons. their "choice" was to become career personnel and "volunteer" to another overseas commission in orier to get a much higher salary.

In general the marines who served for more than one normal period of overseas duties, under a coercive basis, report some combination of the follwing symptoms: more or less permanent nervousness and irritability, increased difficulty in interpersonnel relations with frequent and, apparently unmotivated, explosions of agressiveness, memory lapses and

sleep troubles. Systematic psychological examinations disclose a progressive difficulty in the perfomance of complex tasks, in some cases close to the ones described in the "supraliminal" brain damage syndrome. The Stroop test time index is, on the average, 25% higher then in a normal group of marines (but lower than in brain damage or schizophrenic patients). (7).

The syndrome described is difficult to manage; drug therapy provide limited improvement. The former marines show considerable difficulty in learning new work skills and, significantly, prefer jobs in private security agencies.

Field studies conducted by O.G. Pereira, in Guinea, from 1964 to 1966, with follow-up to 1981 (6), (led) to clarify some of the underlying stress-bound mechanisms of the syndrome above described. A sample of 153 marines, was interviewed and subjected to psychological tests every six months. Two control groups, one consisting of 53 men in Lisbon and other consisting of 78 navy men with clerical jobs in Bissau (Guinea) were subjected to the same longitudinal and across-subjects design. The 153 marines were in two different situations of combat involvement: 26 naval--marines had a low probability of engaging in combat but were continuously involved in security and boat-patrol duties, the remainder 127 special--marines were involved with very intensive combat interventions lasting only about 24 hours, separated by rest periods of five to seven days. The probability of actual fight was high.

The results show that at the end of the 18 months period:

a) the overseas duty situation (navy men with clerical jobs in Bissau), per se, developed hypocondriac and depressive reactions;

b) the intermitent high probability of combat situation (special marines) induced alterations of the interpersonal relations, with detachment of reality and, eventually, anti-social behavior;

c) the continuous low probability of combat situation (naval marines) induced intermediary reactions with prevalence of asthenic reactions (6).

It was also observed that the youngest subjects, in their first overseas mission, showed, with time, a general improvement in terms of assertiveness and feeling of personal security ("The boys became men"), witnessing the build up of adaptation mechanisms. Such mechanisms seem to break down if and when a new period of war duty followed with a small interval in between, i.e. the general case during the colonial war.

In one respect nobody, and particulary the special marines, would show progressive adaptation. When the "news" that a military operation was to come by in the next two or three days the "general activity" of the group involved increased in a crescendo up to the moment of combat (or the decision of coming back without combat). Unobtrusive observations during those periods showed that base line indices of comsumption of alchoolic

beverages, tobacco, water, of sexual activities and of letter writing to Portugal, increased systematically. It was also determined that such increase was strongly correlated with group's subjective expectation of danger of the particular operations to come. (6).

The above facts strongly favor the interpretation that it is a a cognitive factor related to the expectancy of danger that enhances the arousal mechanisms of the alarm phase of the general adaptation syndrome, translated by the behaviors described and it may be suspected that the intermitent repetition of that arousal has a cumulative and progressively damaging effect that ends up in the persistent syndrome observed after more than one normal period of overseas coerced duty.

On the whole, data colected at the Navy Hospital psychiatric clinic, up to 1981, for marines who served not only in Guinea but also in Angola and Mozambique, show that the best predictor of the intensity of disability syndrome is total time spent in the overseas duties.(6)

The field studies conducted in Guinea provided also an important clue. It was found that in units which maintained a high morale all allong the duty assignment less negative effects were detected, either at the end of the period, or during the follow-up (7). It was however difficult to decide, on the only basis of clinical evidence, if this was due to a leadership factor, or to a more global psychossocial group factor, or both, subsequent studies conducted by Pereira and Jesuino (7) tried to clarify the above question

Effects of stress

The question of determining if the stress effects can be moderated by organizational behavior has received scant attention. Traditionally research on occupational stress has been limited to the investigation of direct relationships between role stress and role strain.

" Stress is a non-specific response of the body to any demand "(2), strain, on its turn, is the specific consequences of a single (or usually, repeated) non-specific response in a specific animal organism. The specific consequences may be imediate or long term and they may range from transitory anatomo-physiological disturbances up to death of the organism. Any situation that induces a demand on the organism is called a stressor. An exception to the general trend are the studies of French and Caplan (1972), French, Rogers and Cobb (1974), Cobb (1976)(5) according to which social support can reduce the effects of job stress and strain (main effects) as well as buffer the individual reaction from the stressors (interaction effect).

A similar research (Beehr, 1976)(5) produced mixed results. He found that both group cohesiveness and supervisor support did not significantly reduced the strength of the relationship between role ambiguity and role strain, but autonomy tended to moderate this relationship in the expected direction.

La Rocco and Jones (1978)(5) in a sample of 3725 U.S. Navy enlisted men, using both sub-grouping and moderating regression techniques tried to obtain a more rigorous test of the buffering hypothesis. The

results suggest that the effects of support are positive and additive rather than interactive or buffering:

> (a) higher levels of support and reduced level of stress were each related to the achievement of various organizational outcomes, and(b) support, whether from one's leader or peers, did not appear to be an effective means of removing the negative influences of stress produced by comflict and ambiguity (p. 633).

In a more recent study conducted by the authors (7) with a stratified sample of 158 men from the Portuguese Navy Marine Corps, submitted to two contrasting stressful situations, (one simulating combat conditions and the other consisting of defense and security routines), and using Fiedler's contingency theory of leadership effectiveness, it was found that leadership style could buffer the effects of stress, on strain. The variables considered were three sources of stress (stressors), actual strain and estimated future strain , Fiedler's LPC score, Rice and Chemers leader behavior descriptive index, Fiedler's group atmosphere scale and task structure scale, as well as, unobstructive measures on the general population submitted to the two stress-conditions considered. However, variables pertaining to organizational outcomes, like satisfaction, productivity or turnover were not examined. No matter such limitations, the results has shown that, on the one hand, person oriented leaders under moderate stressful conditions reduce the strain of subordinates, while under lower stressful conditions increase it, and, on the other hand, task-

oriented leaders under moderate stressful conditions increase the perceived stress of followers, while under lower stressful conditions reduce it.

The present study seeks to investigate further the results previously obtained whithin a broader framework encompassing a greater range of military situations and also of psychosocial variables. On the other hand, we are interested in expanding the methods of research, because it may be considered that the questionnaire and rating scales techniques, used in isolation, are not the most appropriated method to pinpoint an elusive phenomenon like the buffering of a stress effect.

Outline of the present field study

As a first step we decided to run a field study using representative samples of the different service conditions faced by portuguese marines, adopting a more comprehensive theoretical framework and using in addition to the questionnaire techniques, other clinical methods like systematic observations and interviews.

Pereira and Jesuíno (7) studied only two marine battalions: an operational battalion and a security and defense battalion. As it was expected and found, men experienced significantly different levels of stress. In the present research we are including a special operations unit, whose mission is much more complex and dangerous, the naval police battalion and some support units, which were expected to experience lower levels of stress in each situation than the operational battalion. In order to avoid bias on the expectation of the men studied, it was decided to constitute samples of all the units of the portuguese marine corps, which, in one way or another, are involved in the field exercises that simulate war activity.

The new theoretical framework adopted in the present study is more focussed than previously on the dynamics of leader-follower transactions and, at least in terms of questionnaire construction, borrowed from the multiple influence approach of Hunt and Osborn (8). Such approach is an attempt to broaden the contingency model through the introduction of the new concept of discretionary leadership. It "refers to those leader behaviors, under the control of the leader, which may vary from individual to individual" [Hunt and Osborn, (9)]. Discretionary leadership implies, therefore, the use of power beyond what is required by position. Also, as it is claimed by the theory and supported by empirical evidence, subordinates are more sensitive to discretionary behaviors rather than to formal behaviors required by the organizational rules and procedures.

On that line, one of the aims of the present study is to verify the effects of formal as well as discretionary leadership behaviors on stress and strain and other outcome indicators like satisfaction with the job and the intention to leave.

In order to take into account the variables referred, we translated and adapted the Martin, Benandi, Osborn and Hunt's (10) multiple influence model of leadership questionnaire and completed it with the five stress measures used in Pereira and Jesuíno (7).

Notwithstanding, the fact that the resulting instrument encompassed much more situational and leadership variables, the limitations of questionnaire research should be kept in mind, specially, if one intends to do an exploratory investigation. Clinical methods are the only ones, that, according to the experience of Pereira, in Guinea, may be used during extreme situations like the field exercices simulating combat action. Systematic observations and both individual and collective interviews are

appropriate for capturing ongoing activities. Clinical methods, allowing for fine exploration of the subjects experience, are expected to compensate the static characteristic of the questionnaire and, eventually, to call attention to new variables not considered in a strict research design.

A clear cut classification of variables into independent and dependent, or predictors and criteria, is not proposed a priori. As it is clear, at this point, a systemic interrelational dynamics is more close to the reality of the stress phenomena than the postulation of simple linear causal links. The basic ideia, for the analysis of the questionnaire data, is to use composites for measuring the following occupational facets:

(1) task characteristics, such as, standardization, specialization, degree of difficulty and variety;
(2) leader behavior, both formal and discretionary, as perceived by subordinates;
(3) attitudes towards the work itself, the chief, the colleagues, the salary and the career outlook;
(4) stress and strain indicators;
(5) general satisfaction and intention to leave.

Both sub-grouping and regression techniques are to be used. Sub-grouping, at first, will be based on the natural groups, that constitute the organization under analysis. It will be recalled that it was at this macro level that buffer effects were found by Pereira and Jesuino (7).

METHOD

SUBJECTS

A stratified random sample of 213 portuguese marines was drawn from the Portuguese Marine Corps population in the same way as in Pereira Jesuíno's (7).

The goal was to sample 10% of the population (about 2.500 men), taking into consideration the organizational structure of the Marine Corps. The sample includes the "operational battalion", the "security and defense battalion", the "naval police unit", the "transportation units" (cars, boats and amphibious vehicles) the "gunnery support unit", and the "special operations unit".

The present expansion of sample, at variance to Pereira and Jesuíno (7), is intended to provide a contiuous range of stress levels and not only the previous two levels attributed to the "operational battalion" and to the "security and defense" battalion.

The basic unit of analysis is the squad and its line of command. For each battalion it is as follows:

Unit	Total per unit	Number of units	Total
1 squad per company	9	3	27
1 platoon commander	1	3	3
1 company commander	1	3	3
1 company second comm.	1	3	3
1 battalion commander	1	1	1
1 battalion second comm.	1	1	1
1 company staff unit	1	3	3
1 battalion staff unit	5	1	5

In the other sampled military units some adaptations were done in accordance with its own structures.

The final sample is divided as folows:

Unit	Total
Operational battalion (B.F.2)	46
Security and defense battalion (B.F.3)	46
Naval police battalion (B.F.1)	33
Gunnery support unit (U.A.F.)	30
Land transportation unit (U.A.T.T.)	12
Amphibious transportation unit (U.A.M.A.)	35
Special operations unit (D.A.E.)	11
	213

The sample includes the total population of the Special Operations Unit (11 men).

All the above subjects answered the questionnaire.

A sub-saqmple of 143 individuals were interviewed both individually and collectively. As there was a time lag between the administration of the questionnaire and the beginning of the interviews, 27 individuals of the original sample had to be substituted, on a random basis, but according to the previous hierarchical positions vacated. So, at the end, 239 men were involved in the present study.

INSTRUMENTS

The following observation techniques and instruments were used:

- Direct observation of behavior in the barracks and during a field exercise of the "operational battalion", the "special

operation unit", the "gunnery support unit", the "land transportation unit" and the "amphibious transportation unit".

- Individual interviews.
- Collective interviews with the squads.
- Questionnaire.

Individual interviews

The individual interviews encompassed a clinical interview and a critical incident interview.

The clinical interview was semi-structured comprising three main sections: auto-biographical data, health data with special emphasis or psychossomatic disturbances and other symptoms of stress, and military life data.

In the critical incident interview the subject was asked, first, to recall and to describe a particularly hard, difficult or threatening situation in wich he was involved and that was well managed, and, then, to consider another similar situation that was inadequately managed. A semi-structured series of queries was used to help the subject to produce a maximum number of details of each situation, such as, where and when it happened, who was involved, how they acted, and the attributed causes and responsabilities of the sucess or failure to manage the situation.

At the end of the individual interview the subjects were also asked to:

- perform a self-evaluation of his own adaptation to the military service, in a five point scale, ranging from "very well" to "very badly adapted".

- perform a self-evaluation of his own global performance in comparison with his own image of the "ideal marine", in a seven point scale.
- to answer questions about the most desired characteristics of a mililtary chief and of a teacher; the choice was between human relations and task related characteristics.
- and, to refer some actual problems that were not considered during the interview.

Collective interviews

Collective interviews were conducted with the command formations and with the squads.

The collective interview to the squads was more focused on group and organizational factors and tried to clarify any ambiguous data collected in the individual interviews.

Imediatly after the interviews, the interviewers rated the interviewees using the SYMLOG forms (11).

Questionnaire

A multipurpose questionnaire was constructed, including a shortened Portuguese version of the Martin, Bernardi, Osborn and Hunt's multiple influence model of leadership questionnaire (10), and five scales of stress taken from Pereira and Jesuíno (7) and some tentative scales of description of leader-follower relationships.

A pre-test of the questionnaire was performed in a non-random stratified sample of 18 Portuguese marines. As a consequence the wording

2.4 self-report on actual stress (based on USA DECS publication on the Management of Stress). (Self-described strain, stress 4).

2.5 estimated consequences for health of actual job condition scale (originated by Pereira and Jesuíno, (6). (Estimated future strain; stress 5).

The working conditions stress scale is related to events on the job and has 14 items pertaining the most lively situations the marines had met during the previous three months of duty.

The extra-organizational stress scale is related to events away from the job and has also 14 items, referring to the previous three months duty. In both cases each kind of potentially stressing event is not considered in terms of "life change units (LCU's)" as in Holmes and Rahe (12) but merely maintained its order on the original scale.

The organizational stress scale is related to ongoing organizational conditions on the job and has 10 items considering the following aspects: morale, discipline and conflict within and inter-units.

Sample:

We are only told about what we do when we do it wrong

Usually	Sometimes	Rarely
2	1	0

The self report on actual stress has 15 items, concerned with actual symptom of stress.

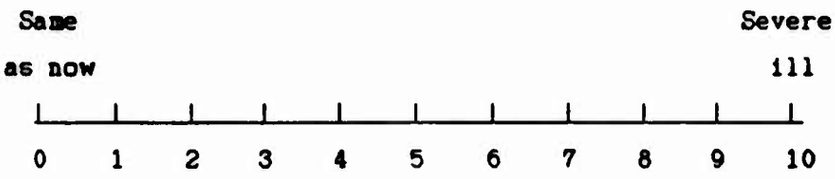
Sample:

I feel depresed/frustrated at home/work

Often	A few times a week	Rarely
2	1	0

The estimated consequences for health of actual job conditions scale is a scale in which the subjects are asked to estimate the positive, neutral or negative health effects of the actual job conditions if these were to continue unchanged for the next two years.

The subject is presented with a 11 print scale being asked to mark a point which would translate his estimate.



RESULTS

The results of the present study are separeted in two sections. First we report the results of the systematic observations, of the interviews and of instruments used in conection with both. Only after, we report the results of the questionnaire.

This way of presenting the results is justified by two reasons. As explained previously the sub-sample of the interviews included 27 new men, not previously submitted to the questionnaire. Also, because of the

usual schedule of training of the marine battalions, the operational battalion and the security and defense battalion changed positions just after the questionnaire was administered.

The schedule of training provided the authors with the oportunity to accompany a 10 day field exercice of the operational battalion and the special operations unit with the cooperation of the support units. That field exercise tried to simulate actual battle conditions.

RESULTS OF THE OBSERVATION AND OF THE INTERVIEWS

Demographic characteristics of the sample

The general characteristics of the sample studied are summarized in table 1.*

Some points deserve to be noticed. The age of the petty officers is considerably higher than the officers. Their education is lower than the majority of the ratings.

Only 40% of the population are conscripts. They serve during 24 months, 6 of them being occupied by courses of instruction on the Marine School.

Two thirds of the population are of urban extraction (about half of them live in Metropolitan Lisbon).

---

* It was verified that the percentages in table 1 reproduce very closely the population parameters of the 1985 official statistics of Marine Corps.

TABLE 1

GENERAL CHARACTERISTICS OF THE SAMPLE

		OFFICERS	PETTY OFFICERS	RATINGS	
%		21,7	12	66,3	100%
AGE, x		30	37	25	
CIVIL STATE	BACHELORS,%	7,7	0,7	46,1	100%
	MARRIED	14	11,2	19,6	
	OTHER				
CONSCRIPTS		23,7		66,3	100%
EXTRACTION	RURAL %	4,9	5,7	23,0	100%
	URBAN	16,8	6,3	43,3	
EDUCATION	1-6 GRADE		10	16,8	100%
	7-9 GRADE		2,1	23,8	
	10-12 GRADE	8,4		11,1	
	UNIVERSITY	13,3		0,7	

Most of the career personel (half of the officers, all the petty officers and half of the ratings) have been involved in the Portuguese Armed Forces counter-insurgency activities in the former overseas provinces, from 1962 to 1975).

STRESS LEVELS

General adaptation and morale

The great majority of subjects are well adaptated to their present duties. The study of the military records showed an insignificant number of disciplinary actions (three punishments for the total sample in the last three months period), but, it should be noticed that there is an "informal", and more person oriented, disciplinary system that takes care of most of the interpersonal problems, which is considered to be more satisfactory, by both leaders and followers, than the formal one. The examination of the health records showed an excellent sanitary situation (only six significant diseases for the total sample in the same above referred period). No significant psychosomatic disturbance was referred.

The above data are consonant with the data collected during the individual and the collective interviews and with the point of view of the command. They are also consonant with the subjects self-evaluations, made during the individual inteviews about their level of adaptation to the military service (Table 2)

TABLE 2

ADAPTATION SCALE %

N = 143

	OFFICERS	PETTY OFF.	RATINGS
1 - VERY DIFFICULT			3
2 - DIFFICULT			3
3 - MEDIAN	17,1	23	29
4 - GOOD	43,5	27,1	34,6
5 - VERY GOOD	49,4	49,9	40,4

Another confirmation of the relative high morale of thr units observed is given by the way subjects situated themselves in relation to the "ideal marine" (Table 3).

TABLE 3

IDEAL MARINE %

N = 143

		OFFICERS	PETTY OFF.	RATINGS
1	LOWEST			
2				
3				2
4		24,5	24	15
5		37	64	65
6		44	12	12
7	HIGHEST	4,5		6

As it may be seen over 70% of petty officers and rattings and over 80% of officers consider to be very close of the ideal standards for marines. Apparently this is not an overstatement.

Variation of stress levels

No matter the good adaptation of the subjects to the service in general, some duties are felt as more stressful than others, and stress responses were obeerved during the field exercises and also in security missions, which combine intense boredom with a tight schedule (alternation of periods of vigilance and of rest of two hours, for 24 hours, every three days).

There is not a general agreement across-subjects upon which of the two situations, the field exercise or the vigilance duty they prefer

to be involved with. The same mixed answers are given when we ask the commanding officers the same question. However, if we ask which situation is more demanding, fatiguing or exhausting more than half refer the field exercise, but there is also a clear bias to consider as more stressful the situation in which each man is involved now or in the near future.

In one aspect, only, everybody seems to be in agreement. The most stressful situation is, by far, the one of the "special operations unit" (which combines the functions of marine, comando, parachuter and diver).

When we turn to the battalions. the one in wich the reported stressfulness is lower is the "naval police batallion". For the other two, the division of subjective evaluations referred above for the general case, is dominant, but according to our observations stress reactions are much more evident and frequent during the field exercises of the operational battalion.

In which respects the support units, it is difficult to decide. For one side, they seem to be close to the naval police battalion in terms of felt stressfulness. For the other side, it seems that the amphibious transportation unit reachs a high stress level during the field exercises. The same is not true for the other two support units. Their main problem is that they are much less informed about what is going on in the field than all the other units involved: the special operations unit, the battalion, the divers unit (not observed) and the amphibious operational unit.

Another way of looking at stress levels respects the dichotomy conscript-career personnel. It was expected and found that the career

personel are better adapted to the different stressful situations experienced. The same is, also, much more evident with the men that were involved in the counter-guerrilla activity twelve years before, specially, the petty-officers. Although, such men find a particular difficulty with physically demanding tasks because of their more advanced age.

The problem of adaptation to stress should always be considered.

CRITICAL INCIDENTS

Quite all the subjects that had previous war experience reported incidents that had to do with such experience.

For the other subjects, more than 50% of the incidents had to do with episodes occuring during the courses of instruction and only 15% had to do with the field exercices. (Of the remainder, 10% are related to on duty problems and only 8% with general organizational problems).

The above general pattern does not apply to the special operations unit; more than 50% of the incidents had to do with the field exercices and only about 25% with the courses of instruction. (The operational and security and defense battalions also diverge a little from the general pattern, but not so much as the special operations unit).

SOCIAL SUPORT

The analysis of the critical incidents reported also reveals that the interpersonal network present in the marine units studied provides its elements with considerable social support. For one side, most of the tasks need cooperation behavior within the group considered (unit, company, platoon, squad), for the other, whenever someone gets in

trouble or into a difficult situation, it is very likely that he will be helped by the superiors, the colleagues or the subordinates. Such help may assume the form either of encouragement, readiness to assist, direct physical aid, or the provision of information to reduce uncertainty or to change a deficient causal attribution. Frequently, also, humor is used to dedramatize different kinds of difficult situations. See Table 4

TABLE 4 - Summarized data from individual interviews

	OFFICERS	PETTY OFFICERS	RATING
Critical incidents			
Responsabilities			
Attributed to self	30%	17%	32%
Attributed to others	53%	71%	56%
Not reported	17%	12%	12%
Colleagues behavior			
Help	57%	71%	59%
Abandonn	10%	4%	9%
Not reported	33%	25%	32%
Superiors behavior			
Help	43%*	63%*	58%*
Uncertainty reduction	57%	88%	77%
Humour	37%	58%	56%
Preference for leadership style			
Competence	59%	61%	42%
Consideration	41%	39%	58%
Relation with colleagues			
Easy	93%	94%	84%
Difficult	7%	6%	16%
SYMLOG mean rating			
Of interviewers			
By interviewers			
UD	2U	1U	1D
PN	9P	9P	8P
FB	3F	2F	1F

* Percentages higher than 100% due to simultaneous behavior types reported.

The results also suggest that the leader behavior on the reported incidents is, by far, more important than the colleagues support, both in terms of diversity and frequency.

The interpersonal network tend to polarize around the groups mentioned above and to assume particular cultural paterns which determine most of the informal behavior that is observed. Nevertheless, the range of such behavior is limited by the network itself. That is to say, the need to preserve an acceptable image of any group to all the other groups limits its peculiar cultural expression, so that all the units observed tend to appear much more similar than different. Such fact curtails the possibility of, for example, a new commander to produce a marked and sustained change in any particular unit.

In addition, it is clear, that there are two positions that stand a considerable greater amount of the interpersonal tension within the network, i.e. the persons in such positions are expected to be much more helpful and effective than the others (with the obvious exception of the commander of the unit). The two positions are squad leader and the platoon leader. The first case derives from the fact that the squads have to act frequently on their own and its leader being a rating. The second case derives from the fact that the platoon leaders are Naval Reserve officers with considerably less experience and age than most of the men they command.

INTERPERSONAL BEHAVIORS

The previous section can be summarized by saying that the interpersonal communication is easygoing at and between all hierarchical levels. That verification is consistent with the SYMLOG data. Subjects were rated by interviwers in the general pattern U, P, F (domi-

nant, friendly, instrumental, i.e. democratic leadership) with the exception of ratings which appeared more submissive. (Table 4).

We tried to clarify by direct observation, both in the barracks as well as during the field exercise, and with the interviews, how the positive interpersonal atmosphere, above referred, comes about and is maintained along time. The data collected favor the hypothesis that the main contributing factor is the professional competence of the leaders, namely, the career marines, at the different hierarchical levels. First of all, a good number the officers, all the sergents and most of the ratings experienced the counter-guerrilla action in the former Overseas Provinces of Portugal, which provided them with a very rich background and clear orientation in what is expected from a marine. Then, the high percentage of career personal in the units provides a good framing for the much less experienced Naval Reserve officers, when in leadership positions and also for the conscripts as subordinates. The interpersonal processes, ongoing during the last twelve years, created the cultural models to maintain its own continuation as a stable set of mutually accepted behaviors.

We had the opportunity to observe what happened when a change of unit command was announced, another one occured, and, also, when some platoon and squad leaders were replaced, as well as some squad members were also replaced. At the one hand, the new leaders and new subordinates felt, very counsciously, the group pressure to accomodate to its own norms. At the other hand, the subordinates relatively to the new leaders, and the leaders relatively to the new subordinates, become very attentive to the others behaviors, specifically to deviations from the general (all units) expected ways of acting. Some mutual adaptations

were detected but, more important, a very strong pressure was also very obvious to return to a steady state.

Some of the interviewees referred spontaneously (and other confirmed the same when asked) that when there is a change of persons, leaders or subordinates, a kind of open credit account is opened, at once, and then such credit account grows or decreases according to the consistent behaviors of the person under observation. It is at this point that professional competence, instrumentality, becomes the most prominent factor of mutual evaluation. The central aspect of competence, in the present case, is the way the leaders manage information. That is, how the leaders activelly search for relevant information and volunteer part of it according to professional standards.

The next decisive steps in this "dynamic game" occur when an exceptional, unexpected, difficult or threatening situation arises. The leader becomes the obvious center of attention and the way he solves or contributes to the solution of the situation is crucial for his future credit. When one such situation requires a specific new group action or a sustained group effort or coping with uncertainty, the capacity of the leader to effectively lead, depends much more on the consideration he shows towards his men than on his competence. The relevant factors are, here, support, direct help and "dramatization", in a person-oriented basis.

In short, at least for the present case, competence (instrumentality) and consideration (human relations orientation) do not appear to be dicothomic leadership factors; they are relevant at different moments of the basic interpersonal process that sustains leadership behavior. Competence contributes to establish and increase the credit of leader

and his real power beyond his formal power. Consideration, becomes, then a requisite to allow true leadership behavior, that is, behavior that makes a difference in the perfomance of the group.

RESULTS OF THE QUESTIONNAIRE

The first step in the analysis of the questionnaire data consisted of the determination of the factorial structure and at the internal reliabilities of the different sub-scales included.

Table 5 lists all the variables (with the abbreviations used in the subsequent tables), the number of the questionnaire items contributing to each one of the variables, and the cross-sectional estimates of reliabity. Appendix A details the factorial structure underlying the multi-item indeces listed in table 5.

As it can be seen, the various instruments are reliable and the of the questionnaire has construct validity.

The next step in the analysis consisted of the examination of the differences of scores pertaining to the hierarchical ranks and the marine units represented in the sample. Scheffé tests of significance were used for each sub-scale.

The main differences found, for each variable, are outlined below.

Task characteristics

(variables: STD, TSKSP, TSKV, TSKD)

The only difference detected respects variable TSKD - task difficulty -, between the amphibious transportation unit (UAMA), with a mean score of 3,6 and the special operations unit (DAE) with a mean score of 2.1 (d.f.= 6/195; F= 16.7, P< .001). The global results suggest

TABLE 5 - Measures of task characteristics, leader behavior, job satisfaction, intention to leave, system of rewards and self-described stress

Measures	Abbreviations used	Number of items	Cross-sectional estimates of the reliability
Task characteristics			
Standardization	STD	4	.50
Specialization	TSKSP	2	-
Difficulty	TSKD	2	-
Variability	TSKV	3	.60
Leader Behavior Description			
Resources	LBD1	5	.76
Role clarity	LBD2	3	.77
Credibility	LBD3	8	.53
Rules and produces	LBD4	3	.70
Work assignments	LBD5	2	-
Support	LBD6	3	.62
Contact	LBD7	2	-
Consideration	LBD8	3	.50
Bureaucratic Expertise	LBD9	2	-
Technical Expertise	LBD10	2	-
Predictability	LBD11	2	-
System of rewards	SYRWD	3	.55
Cohesiveness	COHES	9	-
Discretionary leadership			
Rules and procedures	DISRP	3	.63
Work assignments	DISWA	4	.63
Support	DISSUP	2	-
Intention to leave	ITL	3	.85
Job satisfaction(JDI)			
WORK	WRK	9	.84
CHIEF	CHIEF	11	.81
COLLEAGUES	COLLG	9	.83
SALARY	SLRY	4	.76
CAREER	CAREER	5	.77
SATISFACTION	SATISF	1	-

Measures	Abbreviation used	Number of items	Cross-sectional estimates of the reliability
Discretionary leadership			
Control	CONTROL	1	-
Job clarify	PTBC	1	-
Rules and procedures	PTRP	1	-
Support	PTSUP	1	-
Contacts	BCAMT	1	-
Face to face	BCFACE	1	-
Non personal	BCNPERI	1	-
Desirability	DESIRAB	4	.33
Stress			
Stress type I (events on the job)	STR1	14	-**
Stress type II (life events unrelated to job)	STR2	14	*
Stress type III (organizational stress)	STR3	9	-
Stress type IV (self-described strain)	STR4	15	-
Stress type V (estimated future strain)	STR5	1	-

* This sub-scale was completed only by officers and petty officers with supervisionary functions (N=51)

** Scores are computed by summing the total number of items indicated by each respondent. As they differ from subject to subject reliability cannot be computed.

that tasks are evaluated as fairly standardized and specialized and considered to have low variability and difficulty no matter the rank or the unit of the respondents.

Leader behavior description

(Variables: LBD1 to LBD11)

Significant differences between units are found for support (LBD6), contact (LBD7) and technical expertise (LBD10) as shown in Table 6.

TABLE 6 - Differences between units on LBD variables

df=6,200

Variables	Comparison	P
LBD6 (Support)	UATT/UAF	.05
LBD7 (Contact)	UATT/DAE	.01
LBD10 (Technical Expertise)	UATT/EF1	.05
	UATT/EF2	.05

On the remaining LBD variables, the land transportation unit (UATT) consistently scores lower than the other units, which suggests that in this unit leaders are described in less favourable terms than in all the other units.

On the other side, if we consider the differences among ranks, it is clear that higher officers (commanders) consistently describe their superiors in less favourable terms. The significant differences found are summarized in Table 7.

TABLE 7 - Differences between ranks on LBD variables using Scheffé tests

df=5,188

Variables	Comparison	P
LBD1 (Resources)	1-6, 2-6, 3-6 5-6, 4-6	.01 .05
LBD4 (Rules and procedures)	1-5, 2-5, 3-5	.01
LBD6 (Support)	5-6	.05
LBD7 (Contact)	1-6, 5-6	.05 .01
LBD8 (Consideration)	5-6	.01

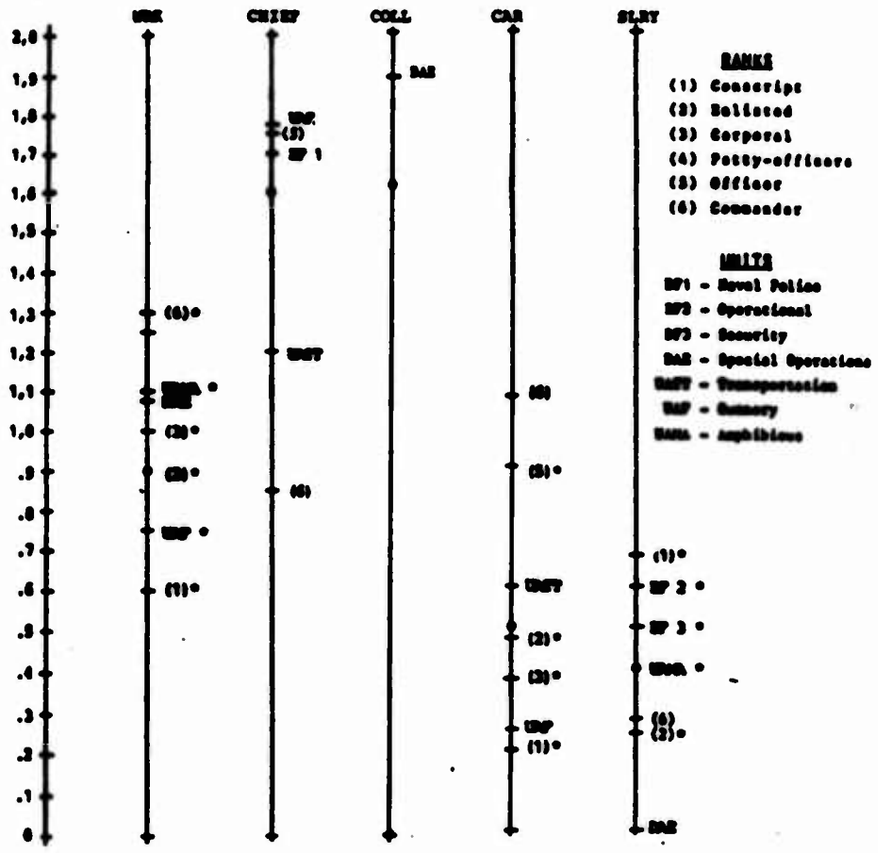
1 - Conscript / 2 - Enlisted / 3 - Corporal /
4 - Petty-Officer / 5 - Officer / 6 - Commander

Discretionary leadership

(Variables: DISRP, DISVA, DISSUP, CONTROL, PTBC, PTRP, PTSUP, BCAMT, BCFACE, BCNPERS)

The only significant difference between units concerns the special operations unit (DAE), which scores higher than the gunnery support unit (UAF) (F=14,6; P<.005).

FIG 1 - GRAPHIC REPRESENTATION OF JOB DESCRIPTIVE INDEX RESULTS BY UNITS AND BY RANKS



For each scale the large circle shows the overall item means (range 0-1) Subgroups obtaining mean scores appreciably different to the overall mean are also indicated. Differences significant at least at .05 level using Scheffé tests are signalled by an asterisk and explained at the bottom of each scale.

In which concerns rank differences, higher officers score lower in work assignment (DISWA) and support (DISSUP), (a result parallel to the one just described for LBD variables).

Job satisfaction (JDI)

(Variables: WRK, CHIEF, COLLG, CAREER, SLRY and SATISF)

Figure 1 pictures the summary of the results on JDI taking into consideration the differences among units and among ranks.

As it can be seen satisfaction is highest towards superior (CHIEF) and colleagues (COLLG), moderatly low towards the work itself (WRK), and low both for salary (SLRY) and promotion prospects (CAREER).

Significant differences between units are found for variables work and salary:

- The amphibious transportation unit (UAMA) scores 1.1 against 0.8 of the gunnery support unit (U.A.F.) for WRK (d.f.=6/195; F=15,2; P<.01);

- The special oper tions unit (DAE) shows the lowest possible score on SLRY (X=0; SD=0) against all other units;

- The operational battalion (BF2) and the land transportation unit (UATT) (F=12.3; P<.05), for SLRY.

Significant differences between ranks are found for variables work and career:

- The conscripts score .6 against 1.0 for (d.f.=5/176; F=12.7; P<.05) and 1.3 for higher officers (F=63.1; P<.01), for WRK;

- The enlisted men (ratings) score .9 against 1.3 for the higher officers (F=32.3; P<.01), for WRK;

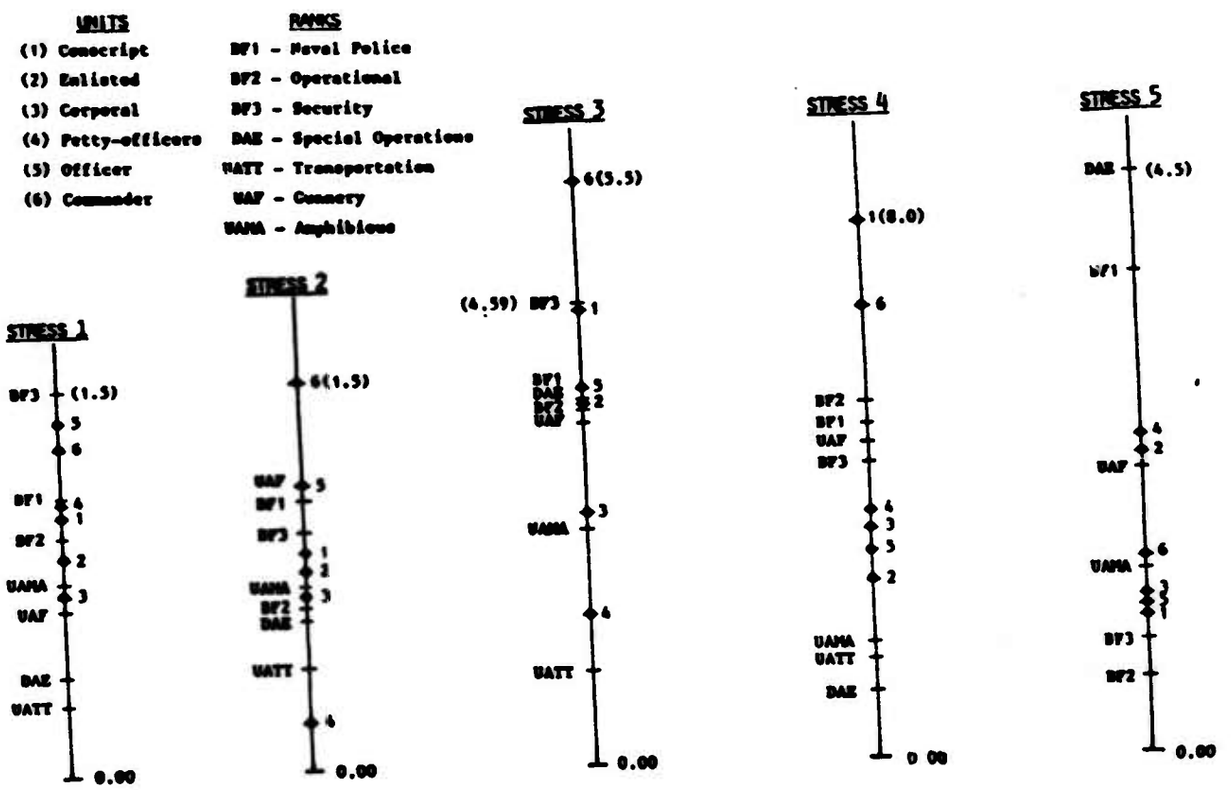


FIG 2 - GRAPHIC REPRESENTATION OF THE FIVE STRESS MEASURES RESULTS BY UNITS AND BY RANKS
(Scales with different range and intervals.)

- The officers score 1.2 against .2 for the conscripts (F=27,4; P<.01) .5 for the enlisted men (F=16.8; P<.01) and .4 for the conscripts (F=17.2; P<.01), for CAREER

Stress measures

(Variables STR1 to STR5)

The results are summarized in Fig. 2

Significant differences between units are summarized on Table 8.

TABLE 8 - Differences between units on stress variables using Scheffé tests

df=6,200

Variables	Comparison	F	P
Stress 1	BF3 - DAE	13.1	.05
	BF3 - UATT	18.64	.01
Stress 3	BF3 - UATT	19.2	.01
Stress 5	BF1 - BF2	15.3	.05
	BF1 - BF3	14.6	.05
	BF1 - UATT	26.7	.01
	DAE - UATT	12 96	.05

The operational battalion (BF3) scores comparatively high on stress on the job (STR1) and organizational stress (STR3) and the naval police battalion (BF1) and the special operations unit (DAE) score relatively high on estimated strain (STR5).

Significant differences between ranks are summarized on table 9

TABLE 9 - Differences between ranks on stress variables using Scheffé tests

df = 5,199

VARIABLES	COMPARISON	F	P
STR 3	4 - 6	13.7	.05
STR 4	1 - 2	11.9	.05

1. Conscript 2. Enlisted 4. Petty-officers 6- Commanders

Higher officers score relatively higher on organizational stress (STR3) and conscripts on self described strain (STR4).

There are not significant differences respecting away-from-the--job stress (STR2). This fact means that all the significant interaction of the stress variables considered in the questionnaire, have to due with stress sources and stress effects inherently bound to the military life of the subjects.

Intention to leave

(Variable: ITL)

A difference was found between the transportation unit (UATT) and the amphibious unit (UAMA) (F=16; P<.05) UATT shows the lowest score on ITL.

Cohesiveness

(Variable COHES)

This variable consists of a semantic differencial scale of a items, each one with 7 points, rated only by officers and petty officers with supervisory responsabilities.

Results obtained are summarized in Table 10.

TABLE 10 - Results on COHES scale

Units	Mean	S.D.	N
BF 1	48.0	3.8	11
BF 2	45.5	3.95	13
BF 3	45.5	6.8	15
DAE	42	-	1
UATT	39.7	2.1	3
UAF	48.8	3.0	4
UAMA	46.2	2.7	5

A significant difference was found between the land transportation (UATT) and amphibious transportation unit (UAF) ($F=16,81$; $P<.01$).

Multivariate Analysis

In order to determine the effects of sub-grouping arrangements both in natural units and in hierarchical ranks a dummy variable transformation was used as recommended by Cohen and Cohen (13). Units were coded in 7 categories, one of each unit, then transformed into 6 dummy variables for 7 mins 1 degree of freedom in the original variable. R squared for these 6 predictor variables, as a set, represents the percentage of variance accounted for by units. The same procedure was followed for hierarchical ranks, which were transformed into 5 dummy variables.

Next step consisted in determining the percentage of the variance in dependent variables that was accounted for by the set of predictors hypothesized to be associated with it. Moderate regression analysis (MRA) was performed for self reported strain (STR4), estimated future strain (STR5), job satisfaction (SATISF) and intention to leave (ITL), as dependent variables.

Table 11 presents the results obtained combining the quantitative (predictors) and nominal (dummy) sets of variables.

TABLE 11 - Contributions of group, hierarchical rank and predictor variables for actual and estimated future strain

	STR 4				STR 5			
	R^2	ΔR^2	F	D.F.	R^2	ΔR^2	F	D.F.
UNITS ONLY	-				.16			
PREDICTORS	.16				-			
UNITS + PREDICTORS	.16	.00			.18	.18		
RANKS ONLY	.11				.06			
PREDICTORS ONLY	.16				-			
RANKS + PREDICTORS	.45	.29	20.4*	5,194	.21	.21		
UNITS + RANKS	.11				.21			
UNITS + RANKS + + (UNITS * RANKS)	.21	.10	.66**	30,162	.30	.09	.59**	30,162

* SIGNIF. F = .0000

As it may be seen while actual strain (STR4) is exclusively accounted for by predictors, estimated future strain (STR5) is exclusively related to units. The effects of hierarchical ranks are more complex. Main effects are observed both from ranks and predictors for STR4 and from ranks for STR5.

The interaction effect of units and ranks was also computed using the technique recommended by Cohen and Cohen (13) which consists of adding a multiplied factor to the scores of the variables. The resulting increments of $\Delta R^2 = .10$ on STR4 and $\Delta R^2 = .09$ on STR5 are not significant. It thus can be concluded that units and ranks produce only additive and not multiplicative effects.

In Table 12 a summary is given of the remaining MRA using exclusively quantitative sets of predictor variables. STR5 was not considered due to the fact of its unique dependence on nominal variables.

In accordance with the results summarized on Table 12 it may be concluded that sets of predictors accounted for a total of 39% of strain, 30% of global satisfaction and 33% of intention to leave.

In general terms strain is significantly related with organizational stressors like leadership behavior, task characteristics, attitudes towards the job and personnal as well as professional life events. Quite interesting is the finding of strain being a better criterion of organizational variables than the more tradicional ones like job satisfaction and intention to leave. As a matter of fact either satisfaction and intention to leave are accounted for by attitudes towards job (JDI) only. Leadership variables do not produce significant increments on those criteria. Particularly helpful seems therefore to be the joint combination of measures STR4 and STR5, the first one as a good criterion of

TABLE 12 - Moderate regression analysis of criteria on sets of predictors

PREDICTOR	CRITERIA: STR				SATISF				ITL			
SETS	R^2	ΔR^2	F	D.F.	R^2	ΔR^2	F	D.F.	R^2	ΔR^2	F	D.F.
LBD	.114				.050				.070			
LBD+DISC	.118	.004	NS		.083	.033	NS		.090	.02	NS	
LBD+DISC+SYSRMD	.183	.065	15,9$^{\bullet}$	1,189	.108	.025	NS		.115	.025	NS	
LBD+DISC+SYSRMD+ +TSK	.244	.061	3.2$^{\bullet\bullet}$	4,185	.119	.011	NS		.128	.013	NS	
LBD+DISC+SYSRMD+ +TSK+JDI	.309	.065	3,24$^{\bullet\bullet}$	5,180	.295	.176	8.9$^{\bullet\bullet}$	5,180	.306	.178	9.0$^{\bullet}$	5,180
LBD+DISC+SYSRMD+ +TSK+JDI+STR1+ +STR2+STR3	.389	.080	7,67$^{\bullet}$	3,177	.304	.009	NS		.325	.019	NS	
+STR4					.322	.018	NS		.339	.014	NS	
+STR5					.330	.008	NS		.339	.000	NS	

$\bullet$ F SIGNIF. .0000

$\bullet\bullet$ F SIGNIF. .01

a balanced organizational behavior and the second one as a sensitive indicator of global expectations about consequences of working conditions.

It also may be seen that stress measures used in the questionnaire fall in two different and independent categories. Job events (STR1), personal events away from the job (STR2) and events pertaining to the organization (STR3) are sources of stress (stressors) and, as such, must be included among the predictors of strain.

In order to hypothesized a possible causal structure linking the various stress measures a path analysis (Pedhazur, (10)) was carried out leading to the arrangement suggested at Fig 3.

The structure proposed seems coherent and relatively straightforward. Variables STR1 and STR2 measure life events respectively on the job (STR1) and away of the job (STR2). Both contribute to determine the level of organizational stress (STR3), and all these objective measures contribute for the symptoms (strain) described by subjects (STR4). Estimated stress in the future, should the present job conditions maintain (STR5), is related, although by a negligible amount with level of strain (STR4) only.

Next step in the analysis consisted of examining possible moderated effects on the relationship between the predictors and the criteria. The method followed was, once again, the one recommended by Cohen and Cohen (13) which consists of adding a multiplied factor of the variables in hierarchical regression analysis. The sets of variables examined were the ones related to leader behaviors, non-discretionary and discretionary, as well. Criteria variables were the self-reported strain (STR4), global satisfaction (SATISF) and intention to leave (ITL). Results are summarised in Table 13.

FIG 3 - CAUSAL STRUCTURE OF STRESS MEASURES. EACH PATH IS INDICATED BY THE SQUARED PART CORRELATION (R^2). ALL THE VALUES ARE SIGNIFICANT AT LEAST OF THE .05 LEVEL.

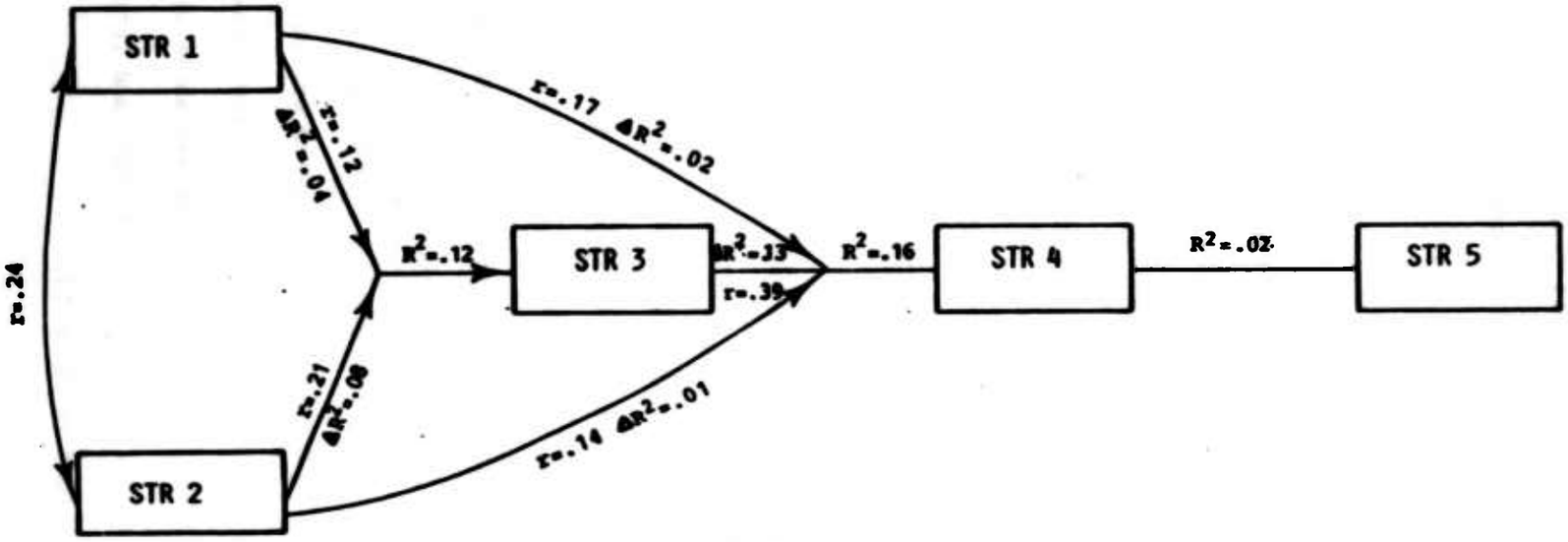


TABLE 13 - [illegible] R^2 analysis by sets for [illegible] effects of leader - behavior - discretionary on strain, intention to leave and satisfaction.

SETS OF INDEPENDENT VARIABLES	STRS 4					ITL					SATISF				
	R^2	$I(R^2)$	F	D.F.	SIG.	R^2	$I(R^2)$	F	D.F.	SIG.	R^2	$I(R^2)$	F	D.F.	SIG.
A. Leader behavior (LBD - 11 IV)	.11		2.28	11,154	.02	.07				ns	.05				ns
B. Discretionary Leadership ([illegible]-3 IV)	.05					.04					.05				
A+B	.12					.09					.08				
A+B+(AxB)	.30	.18	1.22	33,157	ns	.22	.13	.79	33,157	ns	.22	.14	.85	33,157	ns
C - Attitudes toward job ([illegible]-5 IV)	.20		9.77	5,165	.0000	.25		13.3	5,165	.0000	.18				
A+C	.28					.28					.23				
A+C+(AxC)	.41	.13	.92	55,133	ns	.32	.04	.35	55,133	ns	.37	.14	.53	55,133	ns
D - Task characteristics (TASK - 4 IV)	.05		2.08	4,165	.02	.008			4,165	ns	.01				ns
A+D	.28					.28					.23				
A+D+(AxD)	.42	.14	.77	44,165	ns	.38	.10	.53	44,165	ns	.33	.10	.48	44,165	ns
E - [illegible] (1,2,3, 3 IV)	.35		12.8	[illegible]	.0000	.09		.04	[illegible]	.000	.02				ns
A+E	.25					.17					.06				
A+E+(AxE)	.30	.04	.26	33,157	ns	.22	.05	.30	33,157	ns	.16	.10	.57	33,157	ns
F - System of rewards ([illegible] 1 IV)	.05					.01					.05				
A+F	.15					.18					.05				
A+F+(AxF)	.24	.09	1.9	11,181	.05	.13	.05		11,181	ns	.13	.08		11,181	ns
B+C	.21					.28					.20				
B+C+(BxC)	.35	.15	5.02	15,181	.0000	.33	.05			ns	.27	.07			ns
B+D	.11					.07					.05				
B+D+(BxD)	.21	.10	2.80	12,165	.01	.10	.03	.51	12,165	ns	.05	.02	.32	12,165	ns
B+E	.15					.12					.05				
B+E+(BxE)	.18	.03			ns	.16	.04			ns	.09	.04			ns
B+F	.12					.05					.05				
B+F+(BxF)	.13	.01				.07	.01			ns	.08	.02			ns
B+C+D	.27					.30					.25				
B+C+D+(BxC)+(BxD)	.46	.19	2.15	27,165	.01	.37	.07			ns	.31	.08			ns

F values of increments (ΔR^2) were computed using Cohen's formula

$$F = \frac{R^2_{Y \cdot AB} - R^2_{Y \cdot A}}{1 - R^2_{Y \cdot AB}} \times \frac{n - k_A - k_B - 1}{k_B}$$

df=kb(n-kA-kB-1)

It is interesting to note that the relationship between non--discretionary leadership and criteria is not, as a rule, moderated either by discretionary behavior or leaders, by attitudes toward job, by task characteristics or by stressors. Only one significant interaction was found with the variable SYSRWD, but even in this case the significant Beta coefficients are the ones related with factors LBDQ4 (rules and procedures) and LBDQ6 (support). This may be interpreted as an indication of an enhancing effects of the interaction: The less fair is felt the system of rewards the more likely the structuring and support behavior of the leaders will affect the strain of followers.

On the other hand, discritionary leadership interacts with attitudes toward the job and task characteristics, which suggests that the effects of the attributed flexibility of leaders on strain can be moderated by other organizational behavior variables. These moderating effects were detected for the strain criterion only which confirms the previous observation mode about its value for the study of leadership behavior.

In order to interpret the meaning of the interactions found we have to look at the significant Beta coefficients in each equation.

The first equation calculated relates discretionary leadership and task characteristics with strain. It was found that it is the multiplicative term TSKD*DISSUP the only one with a significant Beta (.71 t=3.166). The interpretation is straightfoward: the more difficult the tasks the more stressful will be tha lack of support from the leaders, mostly if such a support can be controlled by the leader.

The second equation, in Table 14, combines the effects of discretionary leadership and job attitudes on strain.

In accordance with the findings it appears that strain is likely to increase under inconsistent chiefs, namely when their behaviors of "support" and "rules and procedures" centradicts the way they proceed on "work assignments". Once again, we are talking here about discretionary leadership behavior, that is to say, about ways of proceeding under the control of the leaders.

This last equation combining the significant interaction effects of discretionary leadership with task characteristics and with job attitudes only confirms, as expected, the precedent findings, just above reported.

DISCUSSION OF THE QUESTIONNAIRE RESULTS

The analysis carried out so far shows that the different units considered in the study are more similar than different. Such findings are consistent with the considerations about organizational culture previously reported about the interviews results.

In which respects the units, only one shows a consistent pattern, scoring below the average on leader behavior descriptions, job satisfaction and group cohesiveness. Paradoxally, this same unit, the land transportation unit (UATT), shows the lowest scores on actual stress symptoms, or strain (STR4) and on estimated future strain (STR5).

It is also interesting to notice that special operations unit (DAE) has the lowest score of strain (STR4) and at the same time the highest one on estimated strain (STR5). One possible explanation may be related to the higher familiarity of the special operations unit (DAE) mari-

TABLE 14 - Results of Hierarchical MRC Analysis

$Y_{B,C,BxC}$	=	- 1.39 DISSUP	- . 30 DISP	+ .85 DISA	- .31 WRK
T		- 2.6*	- 1.09	3.08*	- 1.17
SIG.		(.01)	(.28)	(.002)	(.24)
		- .42 CHIEF	--. 20 COLLG	+ .37 SURV	- .58 CAREER
T		- 3.22*	- 1.2	- 93	- 1:7
SIG.		(.002)	(.22)	(.36)	(.08)
		+ . 05 (DISSUP X WRK)	+ . 08 (DISSUP X CHIEF)	- .02 (DISSUP X COLLG)	- .07 (DISSUP X SURV)
T		. 69	3.48*	- .62	- 1.39
SIG.		(.49)	(.0008)	(.59)	(.16)
		+ . 10 (DISSUP X CAREER)	- . 02 (DISSUP X WRK)	+ .12 (DISP X CHIEF)	- .005 (DISP X COLLG)
T		2.15*	- 1.48	2.2*	- .23
SIG.		(.05)	(.13)	(.05)	(.82)
		+ .006 (DISP X SURV)	+ . 02 (DISP X CAREER)	+ .01 (DISA X WRK)	- .05 (DISA X CHIEF)
T		.295	1.4	1.1	- 3.97*
SIG.		(.77)	(.17)	(.27)	(.0001)
		- .005 (DISA X COLLG)	+ .009 (DISA X SURV)	- .05 (DISA X CAREER)	+ 19.447
T		- .36	.458	- 1.7	
SIG.		(.72)	(.66)	(.08)	

nes with dangerous situation leading them to a more accurate evaluation of potential threats in the the future (3). As an alternative, or in addition, the apparent lack of strain in the special operations unit (DAE) may be attributed to good interpersonal relations between the men and their leader and among colleagues as well.

For the differences among hierarchical ranks the most salient results respect the higher scores of the officers reflecting more negative attitudes towards leadership and the organization, which may be due to more stringent criteria of evaluation used at higher hierarchical echelons.

Another salient result is the higher strain (STR4) reported by conscripts, easily attributable to the anxiety felt at the "inclusionary boundary passage (Van Maanen and Schein, (16)) separating the civilian from the military life (Jesuino, (16)).

The results of the questionnaire, at the macro-level of the unit analysis (as formal organizational sub-groups) suggest that organizational behavior variables have reinforcing effects on the relationship between role stressors on role strain.

In fact, it was found that the only stress measure exclusively related to group (unit) membership is the estimated future strain (STR5). This anticipated threat to health, should the present job conditions be maintained, is not likely to be reduced by leadership techniques. The groups scoring high on this measure, the special operations unit (DAE), the naval police battalion (BF1), and the amphibious unit (UAMA), are fairly well led, cohesive and motivated. In contrast, the land transportation unit (UATT), scoring low on job satisfaction, produced the lowest possible score on estimated strain. Other units scoring comparatively low in this measure,

the security and defense battalion (BF3), the gunnery support unit (UATT) and the operational battalion (BF2), also score moderate to high on job satisfaction measures.

There is a common factor among the three units that score higher in estimated strain (STRESS5). Due to specialization they have no conscripts (DAE and UAMA) or a relatively lower percentage (BF1), and the career personnel, that constitutes them, usually stays in the same unit for a much longer period of years than in all the others. So, the questions of anticipation of strain "should the present conditions be maintained" sounds much more realistic. Further more, at least, for the special operations (DAE) and the amphibious (UAMA) unit, because their men are more familiar with dangerous situations, they may "eventually believe that their chances of survival are weakened if they continue beyond a certain point" (15).

It should also be pointed out that the measure of antecipated strain (STRESS5) represents an alternative way to ask someone about his or her actual strain, and, as it has been seen, one that may produce positive results when the direct measures of actual strain (STRESS4) do not, the case of the special operations unit (DAE). Some people may find it difficult to admit that they are feeling actual strain - that should be the case of marines - and at the same time are not "ashamed", or are even eager, to report their antecipation of future harm, as in such a way they may expected to get some organizational advantage. Besides, why are someone asking them about future harmful consequences for health ?

The results obtained through hierarchical regression techniques seem to favor also the central hypothesis of the present field study concerning the relative importance of discretionary leadership. As a matter of fact it was shown that it is the discretionary leadership rather than

the non-discretionary leadership that interacts significantly with the other organizational variables accounting for the resulting strain.

In summary, we may conclude that leadership plays an important role on the understanding of organizational stress. Formal leaders represent a possible source of stress, specially, when associated with reinforcement of rules and procedures and with lak of organizational competence. But they also may reduce the actual strain of subordinates not only by learning or adhering to stereotypical patterns of effective leadership but also through a more personalized interplay with subordinates. The leadership factors in conjunction with the group atmosphere and cohesion are the ones that contribute mostly to a better adaptation of men to the stressful conditions of marine life.

The above results are mostly concordant with the literature on the subject. La Rocco and Jones (5), for instance, verified that social support and leader support are significant predictors of stress, but such effects are additive and not multiplicative, that is to say, there is no evidence that they moderate the effects of of the stress role. The present results favour also the conclusion that at the level of the formal groups, i.e., the military units, there are not interaction effects. Also, no interaction effects were found between units and ranks.

However, and that is one of the novelties of the present study, at variance with the tradicional studies on this matter, it was found that the stress-strain relationship can be moderated by the organizational variables like task characteristics and job attitudes.

Finally, it was also found that strain is another possible criterion, and an extremely valuable one, for the study of organizational leadership.

GENERAL DISCUSSION AND PROSPECTS

In the present field study a representative sample of the operational portuguese marine units was examined, in different service situations, including a field exercise simulating combat conditions, in order to explore the relationship between leadership variables and stress variables.

The study comes in the sequence of clinical field study by Pereira started in 1964 in Guinea, and a quasi-experimental study, by Pereira and Jesuíno (1982), conducted in the Portuguese Marine Corps. The present study aimed more at being an exploratory rather than a stricly hypothesis-testing research. The main reason for that posture derives from the results of the previous studies, that in conjunction with the literature review (4;5), showed clearly that the relationship between stress and leadership variables is a complex one, as it involves also other situational, psychossocial or, even, personal variables. As a consequence, we tried top selec from an extended set of variables the ones that seem most relevant to establish, in further and more focussed investigations, a functional network with practical applications to real situations.

To stand a better chance to achieve the intended goal a combination of several research methods was used. Each one provided relevant results, that were, essentially, concordant or complementary on the main issues.

First of all, it should be stressed that we found that, for all units studied, the general adaptation of the men to the present duties is good, the interpersonal network provides its elements with considerable

social support, and that discipline and communication are easygoing at and between all hierarchical levels. The job satisfaction indeces are congruent with the above summary, being highest toward superiors and colleagues, moderate toward work itself, although very low toward salary and career prospects.

In such a setting that has a lot to do with a strong organizational culture, it comes as no surprise that both the data from the interviews and the data from the questionnaire indicate that the marine units are more similar than different and that the differences among hierachical ranks are not very marked. Consequently, one should not expect to found high levels of stress pertaining the common characteristics of the work of the marines or due to the organizational sources. Indeed it was found, by direct observation and from the analysis of the interviews, that the higher levels of stress (actual strain) are conected with the training in the Marine School, the field exercices, and with some actions of the special operations unit and of the amphibious unit. In the first case, the training, it is the novelty and the intensity of the situation that should account for the stress level reached; in the remainder it is the perception of a real danger that acounts for it.

On the other hand the questionnaire results revealed that the most important contributing factors for the determination of actual strain are the relations with the colleagues and next the nature of the task at hand.

The questionnaire data were important to clarify the interrelationship among the stress measures. All the three stressors considered contribute to the actual strain, and it is that variable only that contributes for the estimation of future strain. Simultaneously, there

is a causal network among the stressors. Life events on the job and away from the job, both contribute to the organizational source of stress. (See fig. 3). Such a pattern of interrelationship between stress measures was not clear in Pereira and Jesuíno (1982) and was difficult, if not impossible, to deduce from the interview data.

Both the interviews and the questionnaire contributed to a better understanding of the relationship between stress and leadership. Leaders may either represent a possible source of stress or reduce the actual strain of the subordinates.

It was found that discretionary leadership plays an important role on the above referred interrelations. It was a clear result of the interviews that a pre-requisite for an effective leadership is the professional competence of the leader. The questionnaire data revealed that lack of bureaucratic expertise and rigid adherence to rules and procedures, increases the level of organizational stress, whereas a more person oriented assignment of tasks, may significantly decrease strain.

Both sources of data, seem to indicate that both task-orientation, specially when it becomes or be recognized as professional competence, and human relations orientation, specially when it becomes oriented for each specific person, are not dichotomic leadership factors but are both relevant and necessary at different moments of an effective leader subordinate cooperation process. Competence contributes to establish and increase the leader credit and capacity to exercice decisive power beyond his formal power, specially in difficult, ambiguous or dangerous occasions.

The analysis of the critical incident interviews revealed the concrete ways in which the leaders help the subordinates in difficult moments. Such help may even assume a character of direct physical aid, but,

usually consists of encouragement, readiness to assist, reduction of uncertainty, reframing to change a deficient causal attribution or dramatization through humor. The collegues may do the same, but the results, clearly show, that the same action by the leader is much more effective.

It was also found that the effects of the action of the leader and of the colleagues, depend on the group atmosphere and cohesiveness, but such a result, although, in acordance to our expectation, is still at the macro-level of the personal and the group interactions. To decide how a leader should behave, in a particular situation and on the setting of his formal power, toward a particular subordinate and within the boundary of a particular sub-group (squad, platoon, company or, even, battalion), and to be able to plan his own training in conformity, subsequent and more focussed researches need to be carried out. At this point we believe we have selected the relevant variables to be dealt with and that we may try to approach the requirements of the experimental studies in a laboratory setting.

Such is the next step in our long-term research plan; the final one being the set-up and evaluation of a specific leadership training.

Although, the present study was, as we repeatly stated, an exploratory one, some hints may be offered towards ways oi coping with stress is military environments.

Let it be recalled that the fundamental question we are dealing with concerns the possibility that reapeated exposure to stress may produce permanent health consequences . It is such unwanted effect that we want to prevent, and the problems arise because there is not any simple receipt to

do it. The different aspects of stress and their interconections with other variables have to be considered.

Our findings shows that on-the-job stress and away-from-the job life events combine to increase a third stressor, the organizational stress.

It is obvious that organizational sources of stress may be directly managed and the question becomes if the military chiefs want to "adhere to the book" or to create a setting that may favor military effectiveness and job satisfaction. Our present observations clearly show that the more there is job specialization increasing the probability of dangerous situations to occur (the special operations, the amphibious unit and the operational battalion) the more traditional rules, procedures and discipline should be substituted by more flexible forms of leader subordinate cooperation. That seems to be the way to manage this interface, as there is only a limited possibility to act on most of the on-the-job sources of stress, because increased specialization of the marine function usually goes together with increased likelyhood of danger. The leader may only act, when there is perceptual ambiguity or a deficient causal attribution. (To act on the away-from-the-job sources of stress is, obviously, out of question for pratical and ethical reasons).

On the other hand it was also found that the less structuring is the leader behavior, either formal or discretionary, the more is the actual strain reported by men. This suggests that, at least in military situations like the one described, where the general stress level is moderate rather than extreme, "the one best way" for the leader is to structure the tasks of their subordinates but on a one by one (personal) basis.

It will be appreciated that the managing of the organizational sources of stress requires a considerable amount of specific research, because it is here that leadership plays its major role. As a consequence, it is also in this conection that training makes sense. But, it should also be kept in mind that professional competence is a pre-requisite for effective leadership, so that, it is the most important aim of a leader training must be to make him a good professional.

If we turn now to the interface organism - G.A.S. (stress, it becomes clear that we can only decrease the intensity of the non-specific reaction of the organism, discovered by Selye, through progressive adaptation. It is here that marine training (and, eventually, stress dessensitization) may be relevant.

Our study revealed that the instruction period at the Marine School is recollected in the critical incidents interviews in a particular intense way. Such finding quite compelled us to study such training*, it seems logical the training of the leader and the general training of marines should be planned toghether.

Finally, and in accordance with the original studies of Pereira (6) a long period of intermitent exposure to high stress coupled with organizational tension, are important factors for inducing a permanent strain. So the possible action at this level has to do, above all, with career management.

---

* A longitudinal study of Naval Research marine cadets is being carried out but not yet completed.

Literature cited

(1) Kasl, S.V (1983) - Pursuing the links between stressful life experiences and disease: a time for reappraisal. in Cary L. Cooper (Ed.) - Stress Research Issues for the eighties. Chichester, John Wiley & Sons.

(2) Selye, H. (1983) - The stress concept: Past, present and future in Cary L. Cooper (Ed.) - Stress Research Issues for the eighties. Chichester, John Wiley & Lans.

(3) Lazarus, R.S. (1966) - Psychological Stress and the Coping Process New York, macgraw Hill.

(4) Bass, B. (1981) - Stogdill's Handbook of leadership New York. The Free Press.

(5) La Rocco, J.M. and Jones, A.P. (1978) - Co-Worker and Leadership Support as Moderators of stress - strain Relationships in Work Situations. Journal of Applied Psychology. 63, 629 - 634

Fiedler, F. (6) - A theory of leadership effectiveness New York, McGraw Hill.

French, J.R.P. Jr. and Caplan, R.D. (1972) - Organizational stress and individual strain in A.I. Marrow (Ed.) - The Failure of Sucess New York: AMACOM

Cobb, S. (1976) - Social Support as a moderator of life stress Psychosomatic Medicine, 38, 300 - 314

Berh, T.A. (1976) - Perceived situational moderators of the relationship between subjective role ambiguity and role strain. Journal of Applied Psychology, 61, 35 - 40.

(6) Pereira, O.G. (1974) - "Homens em guerra: I - Estudo psiquiátrico". Revista Portuguesa de Medicina Militar, 22, 2, 139 - 154

(1974a) - "Homens em guerra: II - Estudo psicossocial de campo" Revista Portuguesa de Medicina Militar, 22, 2, 139 - 154

(1981) - "Psychological damage in marines after repetition of war duty periods". A presentation to the 17th International Symposium of Applied Military Psychology, Sintra, Portugal.

(7) Pereira O.G. and Jesuíno, J.C. (1982) - "Stress and leadership: Moderator effects in marine units" A presentation to the 18th International Symposium of Applied Military Psychology London, June 1982

Jesuíno, J.C. (1984) - Contingência e interacção nos processos de liderança Doctoral dissertation, Lisboa, UTL.

(8) Hunt, J.G. and Osborn, R.N. (1982) - Toward a macro-oriented model of leadership in J.G. Hunt, S.G. Sekaran and C.A. Schriesheim (Eds) Leadership: Beyond Established Views Carbondale, Southern Illinois Press.

(9) Osborn, R.N. and Hunt, J.G. (1975) - An adaptative - reactive theory of leadership: The role of macro variables in leadership research

(10) Martin, H.J., Benandi, J.A., Osborn, R.N. and Hunt, J.G. (1980) - A guide to the analysis and measurement of variables included in the multiple influence model of leadership Department of Administrative Sciences, Southern Illinois University at Carbondale.

(11) Bales, R.F. and Cohen, S.P. (1979) - SYMLOG - A system for the multiple level observation of groups New York, The Free Press.

(12) Holmes, T. and Rahe, R.H. (1967) - The social adjustment rating scale Journal of Psychosomatic Research 11,213 - 218.

(13) Cohen, J. and Cohen, P. - Applied multiple regression, New York, Wiley.

(14) French, J.R.P., Jr, Caplan, R.D. and Van Harrison, R. (1982) - The Mechanism of Job Stress and Strain Chichester, John Wiley & Sons.

(15) Pedhazur, E.J. - Multiple regression for behavioral research, New York, Holt.

(16) Van Maanen, J. and Schein, E.H. (1979) - Toward a theory of organizational socialization in B.M. Staw (Ed.) =- Research in Organizational Behavior (Vol 1) Greenwich, Conn.: JAI Press

Jesuíno, J.C. (1986) - The use of SYMLOG in the study of organizational socialization in Richard B. Polley (Ed.) - The SYMLOG

Practitioner: Applications of Small Group Research Praeger, under press.

(17) Lazarus, R.S. (1966) - Psychological Stress and the Coping Process New York, McGraw Hill p. 94

APPENDIX A

FACTORIAL STRUCTURE OF THE QUESTIONNAIRE SUB-SCALES

APPENDIX A

Factorial structure of the questionnaire results

1. Task characteristics

Table A1 - Factorial solution after Varimax rotation

Item description	Factor I Specialization (TSKP)	Factor II Variability (TSKV)	Factor III Standardisation (STD)	Factor IV Difficulty (TSKD)
- Percent of colleagues performing the same job	.89			
- Percent of colleagues making decisions of the same type	.87			
- Same tasks from day to day		.75		
- How frequently do exceptions arise		.78		
- How often do you follow about the same work methods or steps for doing your tasks		.55		
- How many written rules and procedures			.58	
- How precisely do these rules and procedures specify how your major tasks are done			.73	
- To what extent did you follow standard procedures			.68	
- Percent of the time do you do you have written or unwritten procedures			.48	
- In the past 3 months how often did difficult problems arise in your work				.73
- About how much time did you spend solving these work problems				.83
Pct of var	19.1	15.3	13.8	10.3
Cum pct	19.1	34.5	48.3	58.6

2. Leader behavior description

Table A2 - Factorial solution after Varimax rotation

Item description	Factor I Resources (LB01)	Factor II Role Clarity (LB02)	Factor III Credibility (LB03)
- Helps make working on my job more pleasant	.55		
- Has the technical know-how to help me on tough jobs	.52		
- Is particularly good at developing relationships with other units	.64		
- Comes up with additional resources when I really need them	.74		
- Is particularly good at getting what I need to get my job done	.67		
- Explains precisely the level of performance that is expected of me		.78	
- Explains the quality of work that is expected of me		.72	
- Explains what is expected of me on my job		.71	
- Doesn't much care what happens in other units with which we typically deal			.76
- Covers for my mistakes to keep me out of trouble			-.58
- Gives me broad assignments, not specific			.51
- Is late and short on getting the resources I need			.49
- Gives me nuclear goals to reach on my job			.38
- Permits me to ignore rules and regulations which affect how do my job			.32
- Doesn't know how to get around bureaucratic road blocks			.41
- Rarely reacts to my suggestions in a predictable way			.36
Pct of var	20.9	9.1	6.0
Cum pct	20.9	30.1	36.1

Table A2 (Cont)

Item description	Factor IV Rules and procedures (LB04)	Factor V Work assignment (LB05)	Factor VI Support (LB06)	Factor VII Contact (LB07)
- Lets me decide what specific duties to perform	.75			
- Lets me develop my own methods for doing my job	.74			
- Decides how I am to do my job	.69			
- Puts me in specific jobs		.80		
- Gives me specific work assignments		.70		
- Is predictable			.70	
- Maintains a friendly working relationship with me			.53	
- Does things to make my job less pleasant			.45	
- Is in frequent contact with me during a typical work day				.78
- Does'nt talk to me after during a typical work day				.77
Pct of var	4.4	3.9	3.8	3.3
Cum pct	40.5	44.3	48.1	51.4

Table A2 (Cont)

Item description	Factor VIII Consideration (LB008)	Factor IX Bureaucratic Expertise (LB009)	Factor X Technical Expertise (LB010)	Factor XI Predictability (LB011)
- Claims the credit for good work done by me	.74			
- Permits me to ignore rules and relations which affect how I do my job	.57			
- Treats me without considering my feelings	.44			
- Reacts to changes in a predictable way		.75		
- Knows the bureaucratic ins and outs		.45		
- Gives vague explanations of what is expected of me			.59	
- Doesn't know how to get around bureaucratic roadblocks			.47	
- Rarely reacts to my suggestions in a predictable way				-.59
- Initiates contact with other groups when it's necessary				.58
Pct of var	3.1	2.7	2.6	2.5
Cum pct	54.5	57.3	59.9	62.4

3. Job Description Index

Table A3 - Factorial solution after Varimax rotation

Item description	Factor I My work (WRK)	Factor II My chief (CHIEF)	Factor III My coworkers (COLLG)	Factor IV My promotions (CAREER)	Factor V My pay (SLRY)
Pleasant	.83				
Boring	.79				
Good	.77				
Annoying	.74				
Satisfying	.67				
Frustrating	.66				
Creative	.64				
Useful	.61				
Fascinating	.56				
Annoying		.66			
Up-to-date		.65			
Tactful		.62			
Stubborn		.59			
Impolite		.59			
Influential		.54			
Knowns job well		.54			
Uncoordinated		.53			
Meany		.51			
Intelligent		.51			
Hard to please		.51			
Responsible			.76		
Helpful			.72		
Fast			.72		
Active			.69		
Lazy			.67		
Slow			.67		
Stimulating			.53		
Loyal			.52		
Intelligent			.52		
Good chance for promotion				.75	
Regular promotions				.73	
Unfrequent promotions				.68	
Opportunity somewhat limited				.67	
Underpaid					.76
Well paid					.71
Income adequate for normal expenses					.62
Bad					.62
Barely live on income					.51
Pct of var	12.1	7.4	5.9	5.2	3.6
Cum pct	12.1	19.4	25.3	30.6	34.2

3. Discretionary Leadership

Table A3 - Factorial solution after Varimax rotation

Item description	Factor I Rules and procedures (DISRP)	Factor II Work assignments (DISWA)	Factor III Support (DISSUP)
- Tells me how I am to go about my job	.78		
- Gives me instructions on how to do my job	.71		
- Decides how I am to do my job	.68		
- Puts me on specific jobs		.72	
- Carefully defines what jobs I am to do		.66	
- Emphasizes rules and regulations which affect how I do my job		.66	
- Helps make working on my job more pleasant		.53	
- Considers my feelings			.67
- Maintains a friendly working relationship with me			.65
Pct of var	29.5	12.4	8.6
Cum pct	29.5	41.9	50.5

Beyond these multi-item indexes discretionary leadership was also assessed by single five points items supposed to measure leader behavior like control, job clarity, rules and procedures, support, contacts, face to face relationships and non personal contact.

5. Intention to leave

This sub-scale comprises three items, each one with five points:

1. Which of the following statements most clearly reflects your feelings about your future in the navy within the next year ?

Definitely will not leave (1) Probably will not leave (2) Uncertain (3) Probably will leave (4) Definitely will leave (5)

2. If you were completely free to choose, would you prefer to continue working in the Navy ?

3. How important is it to you personally to spend your career in the Navy rather than with some other organization ?

Calculation of scale - [ITL] = 1 + 2 + 3

6. Social Desirability

This sub-scale comprisis three items, each one with five points, aiming to measure the degree at which respondents are likely to give social desirable answers.
Due to low internal reliability this measures was discarded.